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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/693,012	10/24/2003	Alex C. Toy	1023-288US01	9367
28863 7590 10/16/2008 SHUMAKER & SIEFFERT, P. A. 1625 RADIO DRIVE SUITE 300 WOODBURY, MN 55125				
EXAMINER				
KAHELIN, MICHAEL WILLIAM				
ART UNIT		PAPER NUMBER		
3762				
NOTIFICATION DATE		DELIVERY MODE		
10/16/2008		ELECTRONIC		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

pairedocketing@ssiplay.com

Office Action Summary

Application No.

10/693,012

Applicant(s)

TOY ET AL.

Examiner

MICHAEL KAHLIN

Art Unit

3762

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 June 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10, 12-27, 29-43, 45-51 and 53-65 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10, 12-27, 29-43, 45-51 and 53-65 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 6/23/2008 has been entered.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 1-10, 12-27, 29-43, 45-51, and 53-65 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kotowski et al. (US 6,055,168, hereinafter "Kotowski") in view of Lebel. Kotowski discloses the essential features of the claimed invention including the following:

5. In regards to claims 1, 3, 10, 14, 16, 18, 20, 27, 31, 33, 35, 37, 43, 47, 49, 51, 55, 57, 59, 60, 62, and 64, Kotowski discloses a boost converter to convert a battery voltage to an operating voltage and a control circuit to inhibit pulse skipping by the boost converter when a level of the battery voltage is greater than a threshold voltage (col. 3, line 19-col. 4, line 8). Since the input (battery) voltage is used to select the gain based on a number of thresholds (col. 3, lines 51-65), and the gain is used to inhibit pulse skipping, the disclosed pulse skipping is inhibited when a level of the battery voltage exceeds some arbitrary threshold voltage. Kotowski further discloses that pulse skipping is activated when the operating voltage exceeds a threshold and the boost converter is a fixed frequency switching mode boost converter (col. 3, line 30). Kotowski does not disclose that this voltage converter is used in a handheld programmer having an internal antenna in combination with a neurostimulator. Lebel teaches of a handheld programmer having an internal antenna in combination with a neurostimulator that utilizes a boost converter, such as the one disclosed by Kotowski, to efficiently provide the voltages needed to operate a device that is small and utilizes off-the-shelf batteries. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Kotowski's invention by providing the voltage converter to a handheld programmer having an internal antenna in

combination with a neurostimulator that utilizes a boost converter to provide the predictable results of efficiently providing the voltages needed to operate a device that is small and utilizes off-the-shelf batteries.

6. In regards to claims 2, 19, and 36, the boost converter activates pulse skipping when the operating voltage exceeds a threshold (col. 3, line 30).

7. In regards to claim 4, 21, 38, 63, and 65, a transistor couples the battery to the boost converter (Fig. 5, element 10). Because the battery voltage enforces the minimum gain, which is determined by the transistor-based switching of 10, Kotowski meets the claim language.

8. In regards to claims 13, 30, 46, and 54, pulse skipping is inhibited by limiting the level of the battery voltage applied to the boost converter (by switching per Fig. 5).

9. In regards to claims 5-9, 22-26, 39-42, and 61, Kotowski's modified invention including modifying the voltage supplied to the boost converter based on the battery voltage, but does not disclose a comparator to actuate the transistor, or that the transistor is a MOSFET/MOSFET pair that transmits the battery voltage less a body diode/resistor voltage/external diode drop to the boost converter. It is well known in the electronic arts to utilize comparators to determine when values exceed thresholds with common off-the-shelf parts and to utilize MOSFET/MOSFET pairs that transmit the battery voltage less a body diode/resistor voltage/external diode drop to provide reliable switching with common off-the-shelf parts. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify

Kotowski's invention by providing a comparator to provide the predictable result of determining when the input value exceeds a threshold with common off-the-shelf parts and to utilize a MOSFET/MOSFET pair that transmits the battery voltage less a body diode/resistor voltage/external diode drop to provide the predictable result of providing reliable switching with common off-the-shelf parts.

10. In regards to claims 15, 32, 48, and 56, Kotowski discloses the essential features of the claimed invention including modifying the gain of the boost converter based on the battery voltage (col. 3, line 60), but does not explicitly disclose utilizing two or more AA, AAA, C, or D batteries. However, it is well known in the art to provide portable devices with two or more AA, AAA, C, or D batteries to power various devices with readily available power sources. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify Kotowski's invention by providing the device with two or more AA, AAA, C, or D batteries to provide the predictable result of powering various devices with readily available power sources.

11. In regards to claims 12, 17, 29, 34, 45, 50, 53, and 58, Kotowski's modified invention discloses the claimed invention but does not disclose expressly the claimed voltage ranges. It would have been an obvious matter of design choice to a person of ordinary skill in the art to modify the voltage converter as taught by Kotowski with the claimed ranges because applicant has not disclosed that these ranges provide an advantage, are used for a particular purpose, or solve a stated problem. One of ordinary skill in the art, furthermore, would have expected Applicant's invention to perform equally well with the voltage converter as taught by Kotowski because both

devices efficiently convert an input voltage to an output operational voltage. Therefore, it would have been an obvious matter of design choice to modify Kotowski's invention to obtain the invention as specified in the claims.

Response to Arguments

12. Applicant's arguments filed 6/23/2008 have been fully considered but they are not persuasive. Applicant argued that Kotowski fails to disclose a boost converter and a control circuit adapted to inhibit pulse skipping by the boost converter when a battery voltage provided by a battery source is greater than a threshold voltage, but instead provides a "pump" signal, wherein if the output voltage of the switched capacitor circuit exceeds a threshold, the switched capacitor skips a clock pulse. Applicant further concluded that Kotowsky considers the output voltage for purposes of pulse skipping and the claimed invention considers the battery voltage for purposes of inhibiting pulse skipping. However, there is no such limitation of considering the battery voltage in the claim language. The control circuit/"inhibiting" step/means for inhibiting/etc. do not recite any requirement of the system actually directly measuring anything about the battery voltage, only that pulse skipping is inhibited "when the level of the battery voltage is greater than a threshold." In Kotowski's device, pulse skipping is inhibited by modifying the gain parameter such that subsequent pulses are less likely to be skipped (col. 3, lines 49-55). Although the gain adjustment is based on the counts of "pump" or "skip" signals determined from the converter output, this output value is the input (battery) multiplied by the gain. As such, the gain adjustment (inhibition of pulse skipping) occurs when a level of the battery voltage is greater than a threshold voltage;

the threshold being the arbitrary level which causes the appropriate number of "skip" signals to be generated to modify the gain. In other words, there is nothing in the claim language that requires the "threshold voltage" to be a constant, preprogrammed value, or even that this threshold is used by the device/algorithm in any sort of comparison step.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MICHAEL KAHELIN whose telephone number is (571)272-8688. The examiner can normally be reached on M-F, 8-4.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Angela Sykes can be reached on (571) 272-4955. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Michael Kahelin/
Examiner, Art Unit 3762

/George R Evanisko/
Primary Examiner, Art Unit 3762

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